Medical Image Analysis
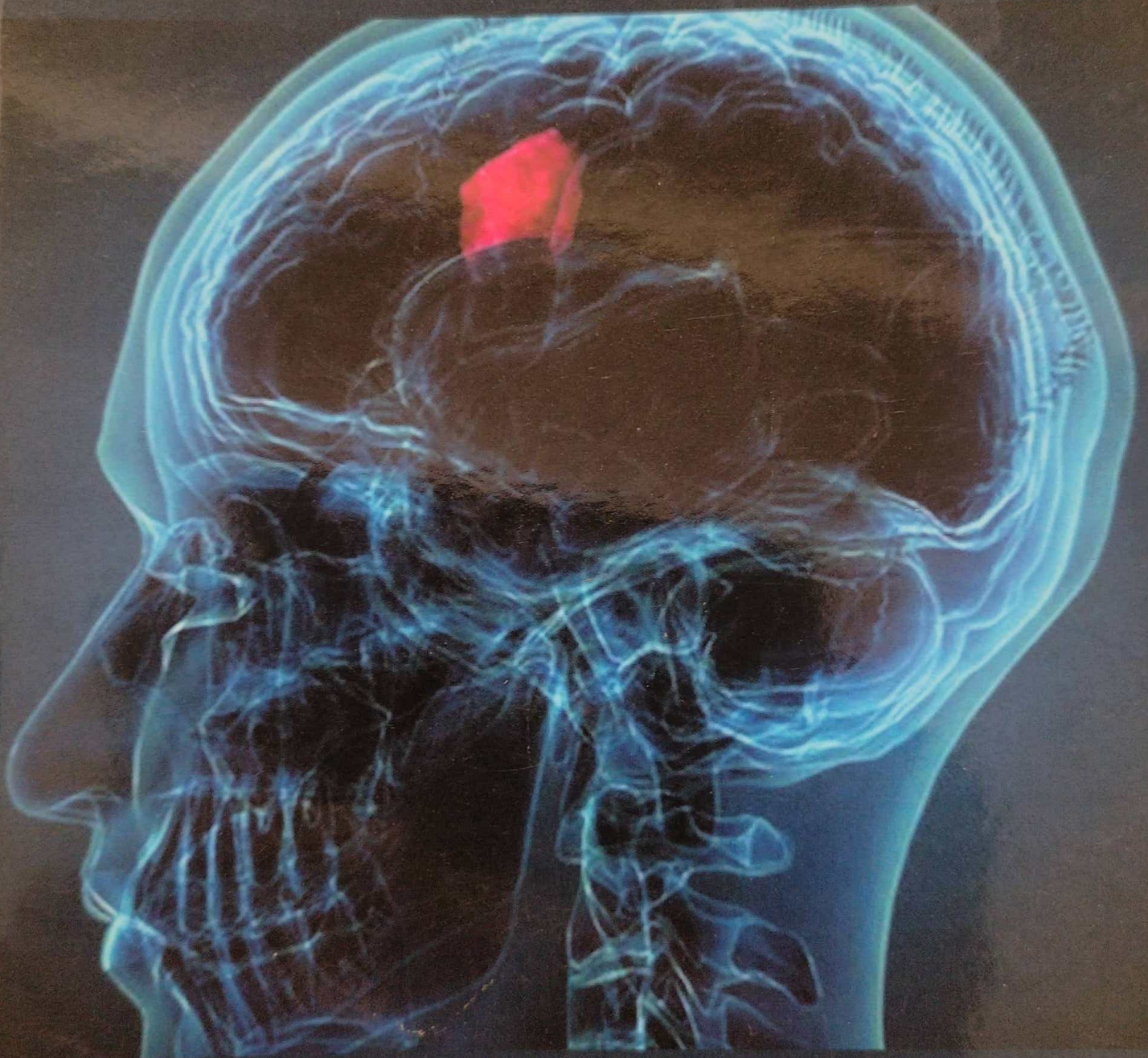## A Research Outcome

(Second Edition)

Editor :
Dr. H. S. Sheshadri

MEDICAL IMAGE ANALYSIS -A Research Outcome

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Editor :

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Appendix B

Authors Profile
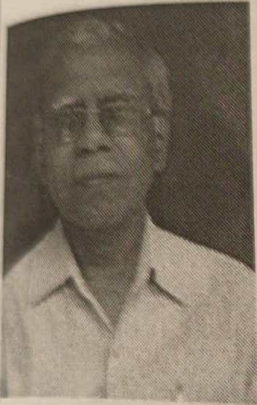
Dr. H.S Sheshadri graduated in Electronics & Communication Engineering from PES College of Engineering ,Mandya, Karnataka (India) during 1974-79. He Obtained M.E. in Applied Electronics from PSG College of Technology, Coimbatore, affiliated to Bharathiar University, Coimbatore during 1987-89 under QIP .Received his Ph.D. from Anna University during the year 2008 for his research work on Mammogram Analysis,(Medical Imaging).He worked as a faculty at PES College of Engineering at the Department of Electronics and Communication Engineering from 1982 up to May 2016 and was professor and Dean Research during 2013 to2016.He has about 34 years of teaching experience and supervised 12 candidates for the award of Ph.D. under his guidance from VTU, Belgaum, University of Mysore, JNTU Ananthpur and Jain University. Even after his superannuation he is actively involved in research and guiding few more candidates working on Medical image analysis , Retinopathy, Video processing etc...

He has established Medical Image Analysis laboratory at the department under the financial support from Vision Group of Science and Technology, Govt.of Karnataka which is being used by many research candidates. He has many publications in National and International Conferences and Journals. Visited and presented technical papers at conferences held at Bejing, Singapore, Malaysia. He is a life member of IETE, Mysuru sub-center, Fellow of IE India, and also life Member of ISTE. He has organised many workshops and International /National conferences. Further was chairman of Board of studies and Board of Examiners at VTU Belgaum and University of Mysore. He has received appreciation and felicitated from various organizations like IE, IETE, for his contribution towards teaching and research experience.
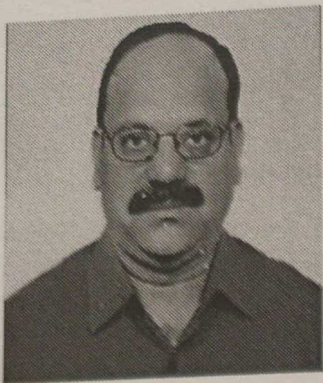
Dr A.P.Manjunatha graduated B.E. in Electrical and Electronics, at PES college of Engineering, Mandya, Mysore university during the year 1990. He Pursued M.Tech in Bio-Medical Instrumentation from SJCE, Mysore during the year 1998. He received Doctoral degree from JNTU college of Engineering, Anantapur, in Electronics and Communication Engineering. He has got more than 25 years of teaching experience. Presently he is working as Associate Professor, in Medical Electronics Department, Dr.Ambedkar Institute of Technology Bengaluru-56. He has worked on the development of CAD for early detection of breast cancer and has published technical papers in reputed journals.

Dr. C. Anjanappa, received his B.E Degree in Electronics and Communication Engineering from Siddaganga Institute of Technology, under Bangalore University during the year 1995-96. And M.E in Electronics and Communication Engineering from University College of Engineering Bangalore, Bangalore University, during the year 2001. Presently working as Assistant professor in the department of Electronics and Communication Engineering, NIE Institute of Engineering, Mysore. He has published many papers in international journals and conferences. He is a life member of ISTE and IETE.
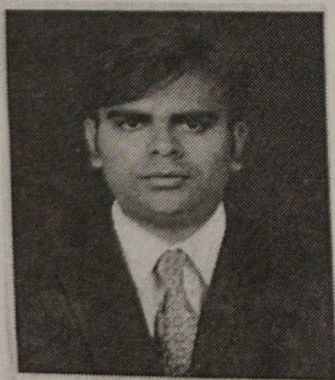
Manoj Kumar S.B obtained his BE degree in Electronics and communication Engineering from Shridevi Institute of Engineering and Technology, Tumkur in 2006, M.Tech in VLSI Design and Embedded System from PES College of Engineering ,Mandya in 2009 and pursuing his Ph.D. in the area of Medical image processing on eye Diabetic Retinopathy at PET Research Centre, Mandya under University of Mysore. He is currently working as Assistant Professor in the Department of Electronics and communication Engineering, BGSIT, BG Nagar, Mandya from past 10 years. He is a life member of IEI, InSc, has participated in various national and international conferences and seminars in India.

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CHAPTER - 5

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Detection of Retinal Disease Screening Using Local Binary Patterns

Abstract:

This work explores partial efficiency with effective structure based on fundus image in to characterize among disease and normal images. The execution of LBP in the process of a surface description as retinal image had it investigated also contrasted and different description. The objective is to separate DR and typical fundus Images investigating the surface of the retina foundation and keeping away from a past sore division. For each experiment, several classifiers were tested on an average sensitivity and specificity higher than 0.86 in all the cases and almost of 1 and 0.99 respectively, for DR detection were achieved. These outcomes recommend that the strategy exhibited in this paper is a powerful calculation for portraying retina surface and can be valuable in an analysis help framework for retinal sickness screening.

Keywords:Local Binary Patterns (LBP), diabetic retinopathy (DR).

1. INTRODUCTION

Retinal Disease may cause to any part of the retina. If it is untreated that may leads to visual blindness, among many retinal diseases like retinal tear, retinal detachment, macular hole, macular degeneration, retinitis pigmentosa diabetic retinopathy is also a comes under retinal disease. In this paper we concentrated more on diabetic retinopathy. Diabetic Retinopathy related to the retinal damage causing the blindness for diabetic patients.

A few people are undergone screening regularly, while others not aware of it. The body can't store the sugar from sustenance, and it courses through the circulatory system. This sugar responds with the dividers of the veins as it does as such, making them separate after some time. Diabetic Retinopathy is the harm to the retina. As light beams come into the eye, through the viewpoint, it arrives on the retina to be transform into electrical signs to be sent to the mind. Passages and veins take oxygen and supplements to your retina and diabetes harms and pulverize these veins.

CHAPTER - 6

An Identification of diabetic retinopathy using Kirsch Edge Detection and Watershed Transformation Algorithm

Abstract

A diabetes mellitus can affect various parts of the body. Nowadays Diabetic retinopathy is a one of the common retinal complication associated with diabetics. Here the small blood vessels have a high level of glucose in the retina make vision will be blurred and can cause blindness eventually, which is known as diabetic retinopathy. If in case the symptoms of DR are identified in the early stage then proper treatment can be provided to avoid blindness. Normally the retinal images are collected from the fundus camera are examined directly and diagnosed. Due to this certain abnormalities due to diabetic retinopathy are not directly visible through the naked eye .Hence by using the image processing techniques these abnormalities can be extracted accurately and required treatments and precautions can be taken. And this also reduces the time for the ophthalmologists to detect the disease and give accurate treatments.

Keywords: *Diabetic Retinopathy, Exudates, Feature, Fundus Camera, Micro aneurysms*

I. INTRODUCTION

Diabetic retinopathy is a main cause of blindness in the worlds 20 to 74 years old. Patients with type 1 or type 2 diabetes are at major risk of this condition. In early stages like the first two decades of disease, nearly all patients with type-1 diabetes and more than 70% of the patients with type-2 diabetes have retinopathy. In modern life many diseases are affect the normal life of a human being. In those diseases Diabetes is also one, which causes due to the imbalance in insulin levels in a human body. Diabetes mellitus affects multiple organs of the body like eyes, kidney, liver, heart etc is shown in figure 1. if diabetes affects human eyes, the disease is termed as Diabetic Retinopathy (DR). Diabetes also increases the chance of having glaucoma, cataracts and other eye problems.